

Executive Summary

Project Purpose and Need

In 2005, the Defense Base Closure and Realignment Commission recommended the termination, realignment, and consolidation of military installations across the country. This process, known as Base Realignment and Closure (BRAC), included a recommendation to close Walter Reed Army Medical Center in Washington, DC and move most of its operations and employees to the National Naval Medical Center (NNMC) in Bethesda, Maryland by September 2011. Once the move is completed, the expanded medical campus will be known as the Walter Reed National Military Medical Center (WRNMMC) and may grow to 10,500 employees, a potential net increase of 2,500 employees.

The 2008 NNMC BRAC Final Environmental Impact Statement (FEIS) identified pedestrian access improvements at Medical Center station to improve pedestrian safety. In May 2008, the Department of the Navy issued a Defense Access Road (DAR) Needs Report that identified transportation needs around NNMC due to BRAC employment growth, including a new bank of elevators for the station on the east side of Rockville Pike to improve access to the station and reduce the number of pedestrians crossing the Rockville Pike and South Drive/South Wood Road intersection.

To that end, the Washington Metropolitan Area Transit Authority (WMATA) in collaboration with the Maryland Department of Transportation (MDOT) and Montgomery County initiated this study to examine access improvements for the Medical Center station. This study assesses existing station access for all travel modes, including pedestrian, bicycle, bus, and personal automobile, as well as the station's ability to accommodate both general and BRAC-related growth in the immediate area. Alternatives to improve station access were conceptually designed and their costs estimated.

The purpose of this study is to:

- Evaluate the need for enhanced station access to reduce the number of pedestrians crossing Rockville Pike
- Develop multiple alternatives for enhanced station access
- Develop various performance measures to evaluate alternatives

Improvements to the Medical Center station are a high priority; the Obama Administration included the project in the Department of Defense (DOD) budget.

Introduction

The Medical Center Metrorail station, located on the Metrorail Red Line, primarily serves employees of the National Institutes of Health (NIH) and NNMC in Bethesda, Maryland. The station has a single entrance, located at the southwest corner of Rockville Pike (MD 355) and South Drive/South Wood Road near the NIH Gateway Center. The BRAC process may add 2,500 employees to NNMC by 2011, significantly increasing ridership at the Medical Center station.

Currently, NNMC employees cross Rockville Pike at-grade or utilize the NNMC shuttle service to access the Metrorail station. WMATA in collaboration with MDOT and Montgomery County are studying the feasibility of station modifications, including a new entrance on the NNMC side of Rockville Pike. Four goals guided the development of station improvements:

Encourage and support transit ridership. Since some nearby roadways and intersections are either at or nearing capacity, new or upgraded station access should encourage and support transit ridership to alleviate congestion and provide for an efficient means of travel for employees and area residents.

Reduce trip time. A decrease in transit trip time would help accommodate future employee growth in the area and increase the attractiveness of alternative transportation modes. In addition, reducing vehicular trip time by reducing vehicle and pedestrian conflicts would improve mobility to and around NNMC.

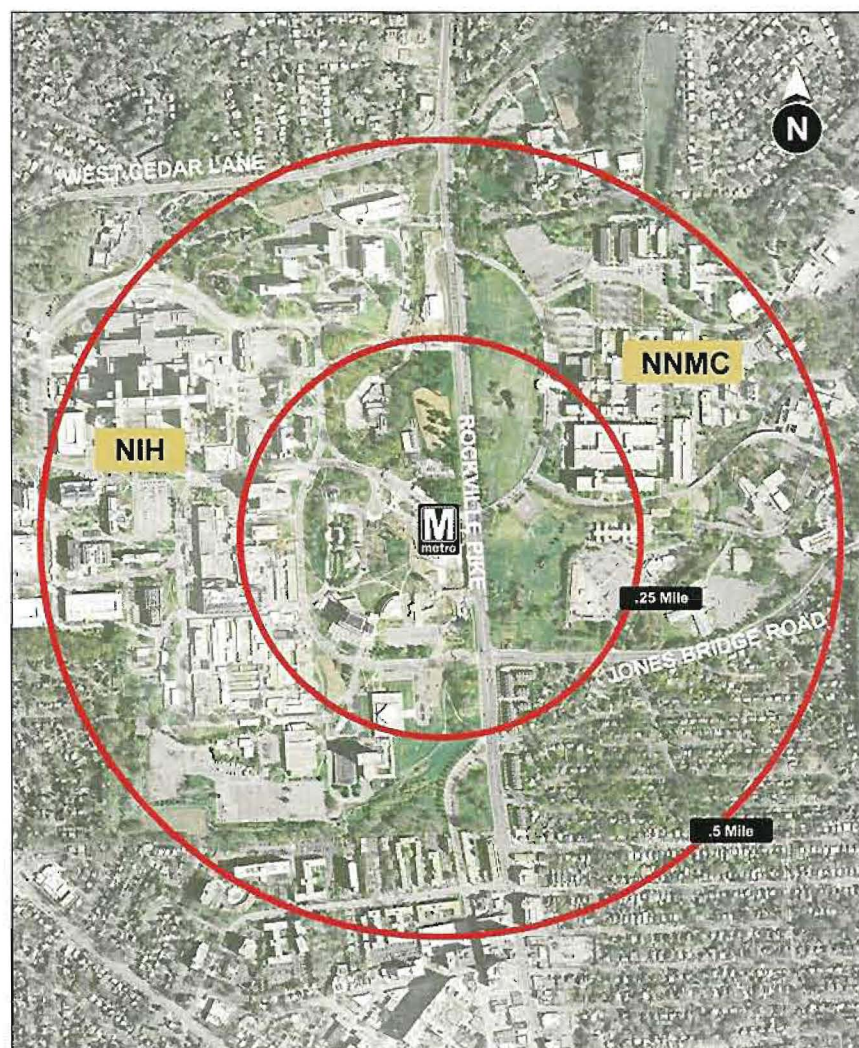


Figure ES-1: Medical Center Station Area
Source: Google Earth

Enhance pedestrian safety. The intersection of Rockville Pike and South Drive/South Wood Road has potential pedestrian safety issues. Vehicle turning movements, limited pedestrian amenities, and long wait times to cross create an inhospitable pedestrian environment.

Maximize cost-effectiveness. Because funding is limited at all levels of government, WMATA developed alternatives that would offer the most benefit for the least cost. Because a range of alternatives were explored, preliminary cost estimates as well as various measures of effectiveness were developed.

Existing Station Characteristics

The Medical Center station, through both Metrorail and bus service, provides good transit access to NNMC, NIH, and the surrounding area. The station carried an average of 10,422 Metrorail passengers per weekday in 2007, including 5,240 boardings and 5,182 alightings. Since then, daily ridership has grown over seven percent. In the peak periods, the vast majority of riders enter or exit the station by walking. The NNMC campus is within one-half mile of the Metrorail station, which is considered a comfortable walking distance for the majority of passengers.

Passengers also access the station by NNMC or NIH shuttles, Metrobus, Ride On, personal automobiles, and bicycles. Pedestrian facilities around the station are generally good and the crossing of Rockville Pike at South Drive is compliant with the American with Disabilities Act (ADA). While there have been few accidents between pedestrians and vehicles in recent years, some issues exist at this intersection:

- Long signal phase for Rockville Pike
- Conflicts with turning vehicles

In the peak hour, approximately 250 pedestrians cross Rockville Pike at the South Drive intersection.

Other station issues include the need for additional bike lockers and the need for a Kiss & Ride lot. WMATA has plans to restore the Kiss & Ride lot, as NIH recently transferred the former lot back to

the agency. Inside the station, the facilities adequately accommodate passenger flows and there are no existing capacity issues.

Future Station Characteristics

Growth at both the NNMC and NIH campuses can reasonably expect to encapsulate the vast majority of future development surrounding the station. BRAC actions will potentially bring up to 2,500 new jobs to the NNMC campus, the majority of which will be located at the main hospital facilities. According to the FEIS, patient and visitor load will double to 981,000 per year once construction is complete. Employment growth at NNMC and NIH will be the primary driver of daily passenger growth at the Medical Center station.

NNMC has committed to increase the existing transit mode share of 11 percent to 30 percent by BRAC build-out in September 2011. The NNMC transit goals have a substantial impact on future station ridership. The analysis in this study estimates that ridership will increase almost 56 percent between 2007 and 2020. NNMC and NIH employees are expected to constitute about 72 percent of total Medical Center boardings and alightings, as shown in Figure ES-2. Home-related trips are the next largest trip purpose at 19 percent, while patients, visitors, and "other" trips make up the remaining nine percent.

Under these conditions, over 6,700 pedestrians will cross Rockville Pike daily in 2020, traveling between NNMC and both the Metrorail station and the bus

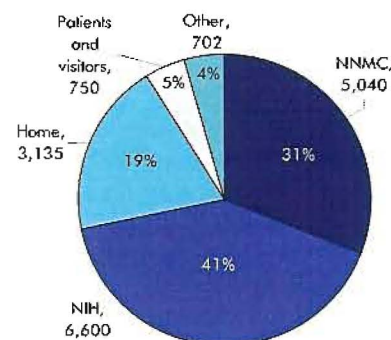


Figure ES-2: 2020 Ridership Estimates by Trip Purpose

stops. It is estimated that between 875 and 1,000 people would cross Rockville Pike in the peak hours. This would be a substantial increase in crossings from the existing volumes.

NNMC is expected to increase the shuttle bus service; therefore increased use of the NNMC shuttle bus could potentially decrease this number by up to 240 people during the peak periods.

Station Entrance Alternatives

The study analyzed five alternatives, each of which would address the study goals to varying degrees. Because of the focus on the Rockville Pike crossing due to NNMC growth, the location of the existing entrance and station mezzanine and the security constraints at NNMC, all alternatives are limited to the same general area around the existing crosswalk. The five station access alternatives include:

1. Improved crosswalk
2. East-side elevator access
3. Shallow pedestrian tunnel
4. East-side elevator access and pedestrian tunnel
5. Pedestrian bridge

Some alternatives share common elements, which are delineated in Table ES-1 for clarity.

None of the alternatives would generate new ridership because they all comprise modifications to the existing entrance. However, all the alternatives would be expected to increase the convenience of transit and make transit a more attractive option to varying degrees.

One of WMATA's roles as a regional agency is to study station access alternatives and evaluate

their effectiveness. WMATA is supportive of transit access improvements. However, the decision whether this project gets built would be made by others such as DOD, MDOT and/or Montgomery County. As part of that decision making process, the project sponsor(s) would determine which alternative is most desirable and feasible.

Table ES-2 shows a comparison of alternatives with respect to performance measures derived from study goals. Performance measures in the areas of traffic/

pedestrian conflict, vehicular delay, and construction traffic impacts are reported on a relative scale that rates each alternative according to the performance measure as High, Medium, or Low as they relate to each other.

Alternative 4 provides the most benefits but is the costliest. Alternative 2 provides significant time-savings to Metrorail patrons, which are estimated to make up 80 percent of the future NNMCM employees arriving by transit, but does not reduce the number of traffic and pedestrian conflicts for non-Metrorail transit users. Alternatives 3 and 5 would serve all pedestrians, but would not lower travel times over the existing station configuration. Alternative 1 enhances pedestrian safety by adding a new median refuge; however, it would not reduce the number of pedestrians crossing Rockville Pike. In short, all the alternatives would address the study goals to varying degrees.

Table ES-1: Components of Alternatives

Components	Alternative				
	1	2	3	4	5
Upgraded crosswalk	X	X			
East-side Kiss & Ride	X	X	X	X	X
New platform stairway and escalator		X		X	
East-side elevators		X		X	
Shallow pedestrian tunnel			X	X	
Pedestrian bridge					X

Table ES-2: Evaluation of Alternatives

Performance Measure	Alternative				
	1	2	3	4	5
<i>Pedestrian Safety</i>					
Number of traffic and pedestrian conflicts*	High	Medium	Low	Low	Low
<i>Trip Time</i>					
Vehicular delay	High	Medium	Low	Low	Low
Metrorail passenger travel time** (minutes)	6.7	3.3	6.7	3.3	6.7
Bus passenger travel time*** (minutes)	3.8	3.8	3.8	3.8	3.8
<i>Cost Effectiveness</i>					
Estimated project cost**** FY09\$ (M)	0.7	30.5	31.5	59.4	14.6
Construction traffic impacts	Low	Low	Low	Low	Medium

* Assumes average pedestrian wait time is 1.25 minutes to cross Rockville Pike; maximum wait is 2.5 minutes.

** Travel time from faregates to the NNMCM security checkpoint. Assumes 3.5 feet per second walking speed.

*** Travel time from first bus bay to the NNMCM security checkpoint. Assumes 3.5 feet per second walking speed.

**** Estimates include construction, planning, engineering, construction management, and administrative costs.

Alternatives 3 and 4 utilize a mining construction method for pedestrian tunnel.

Implementation

Each alternative has physical requirements and considerations regarding architecture, structures, and mechanical, electrical, and system components. A key consideration is to avoid the underground substation, station vent shaft, and escalator passage on the west side of Rockville Pike in Alternatives 2, 3, 4, and to a lesser extent, 5. Access improvements to the Medical Center station could be built by a variety of parties.

The timeframe for implementation of Alternatives 2, 3, 4 and 5 would vary between 36 to 42 months, which is based on WMATA experience with similar scale projects. This schedule is dependent on availability of sufficient funds at the outset of the project for project initiation, environmental clearance, preliminary engineering, development of design build documents, and availability of construction funds prior to issuance of an RFP for project implementation.

The project sponsor(s) and the alternative selected would likely depend on funding sources and levels. Preliminary cost estimates, shown in Table ES-3, were developed for all alternatives, which include construction costs and project delivery costs.

The range of accuracy of this estimate at this conceptual level of development is -10 percent to +30 percent. These cost estimates will be further refined during design. This report is intended to provide information and sound analysis to support decision-making, but does not recommend a specific alternative.

DAR Considerations

The Navy is seeking information for the DAR funding request, which identified transportation needs around NNMC, including new elevator access for the Medical Center station on the east side of Rockville Pike. Improvements are needed because the proposed BRAC action will impact the intersection of South Wood Road and Rockville Pike by contributing to the significant backup of traffic in the afternoon rush hour. According to MDSHA and WMATA, the traffic volumes entering and exiting NNMC are projected to increase by over 50 percent and NNMC-related pedestrian volumes will triple.

Due to the increase in these volumes, pedestrian-vehicle conflicts are expected to heighten following the BRAC action. Given the projected increase in pedestrians crossing Rockville Pike daily, the station entrance alternatives, to varying degrees, serve this volume by enhancing

access to NNMC and reducing conflicts between pedestrians and vehicles. The congestion leaving the NNMC campus, particularly in the PM peak period, limits access to the facility and negatively impacts the quality of life for patients, visitors and employees of the hospital. As such, it detracts from the hospital's mission to serve the military community.



Figure ES-3: Medical Center Station Entrance
Source: Schumin Web Transit Center

Table ES-3: Cost Estimates (FY09, \$ million)

Costs*	Alternative				
	1	2	3	4	5
Construction	0.5	22.6	23.3	44.0	10.8
Project delivery	0.2	7.9	8.2	15.4	3.8
Total	0.7	30.5	31.5	59.4	14.6

* Accuracy range of -10 to +30 percent.